



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,635	07/25/2003	Noyan Kinayman	17747	4893
7590		12/30/2004	EXAMINER	
Tyco Technology Resources		WAMSLEY, PATRICK G		
Suite 140		ART UNIT		
4550 New Linden Hill Road		2819		
Wilmington, DE 19808-2952		PAPER NUMBER		

DATE MAILED: 12/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/628,635		KINAYMAN ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Patrick G. Wamsley		2819	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 November 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) 33 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>12/04 and 07/03</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Restriction*

Claim 33 is withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 11/22/2004.

### *Claim Objections*

Claim 32 objected to because of the following informalities:

Claim 32, line 1: Change "line" to -- line's length --.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6, 8, 11, 18, and 23-27 are rejected under 35 U.S.C. 102(b) as being anticipated by the Cheng IEEE article, hereafter Cheng, as described in the European Search Report in the 12/03/2004 Information Disclosure Statement.

For claim 1, Cheng discloses a transition, as depicted in Figure 1, comprising first and second transmission lines on parallel planes; a third transmission line orthogonal to the first and second transmission lines; and first and second transducers.

For claim 2, Cheng's third transmission line is a waveguide.

For claim 3, Cheng's first and second transmission lines are microstrip lines [see the first paragraph of section 2, Formulation].

Art Unit: 2819

For claim 4, Cheng's first and second transmission liens are disposed on boards.

For claim 5, Cheng's boards overlap each other, as shown in Figure 1.

For claim 6, a distance of at least one tenth of an operating signal wavelength separates Cheng's boards from each other.

For claim 8, Cheng's first and second transducers respectively convert signals to and from TEM and waveguide modes.

For claim 11, each of Cheng's transducers comprises a transmission portion; a waveguide portion; and a conversion portion.

For claim 18, Cheng uses a hollow waveguide, as shown in Figure 1.

For claim 23, Cheng discloses a support plate, as shown in Figure 1.

For claim 24, Cheng's support plate is rigid.

For claim 25, Cheng's support plate is made of metal.

For claim 26, Cheng's support plate comprises a borehole.

For claim 27, Cheng's support plate is at least one mm thick.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Art Unit: 2819

Claims 7, 9-10, 12-17, 19-22, and 28-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheng in view of the Jain IEEE article, hereafter Jain, as described in the European Search Report in the 12/03/2004 Information Disclosure Statement.

Unlike claims 7, 9-10, 12-15, 17, 19-22, and 28-32, Cheng lacks certain recited elements. These claimed limitations are provided by Jain, as described below. At the time of the invention, it would have been obvious to one of ordinary skill in the art to have applied Jain's teachings to Cheng's transition. The motivation would have been to provide excellent isolation between adjacent transitions, as suggested by Jain.

For claim 29, Jain uses fins (quarter wavelength strips) to perform the recited conversion process, involving the claimed orthogonal plane positions.

For claim 7, Jain provides printed circuit boards, hereafter PCBs.

For claims 9 and 19, Jain provides a rectangular waveguide, hereafter RW, mode, as depicted in Figure 1 of Jain.

For claim 10, Jain provides a  $TE_{10}$  mode.

For claim 12, Jain provides a fin perpendicular to the TEM mode signal's propagation direction.

For claim 13, Jain provides a common substrate.

For claim 14, Jain provides a conductive barrier.

For claim 15, Jain's barrier is a metallic wall.

For claim 16, Jain's wall has perforations.

For claim 17, Jain's first and second transducers are identical.

For claim 20, Jain's waveguide is at least one-quarter mm in length.

Art Unit: 2819

For claim 21, Jain's waveguide comprises a metalized dielectric filler.

For claim 22, Jain's filler has an impedance matching the waveguide.

For claim 28, Jain discloses an autonomous cruise control, hereafter ACC, system. See the first paragraph of section I, Introduction, in Jain.

For claim 30, Jain's signal is between roughly 65 GHz to 85 GHz, as this range is within Jain's maximum simulated range of 55 GHz to 140 GHz.

For claim 31, Jain's return loss is better than 15 dB and Jain's insertion loss is better than 0.6 dB. See the chart in Figure 6 of Jain.

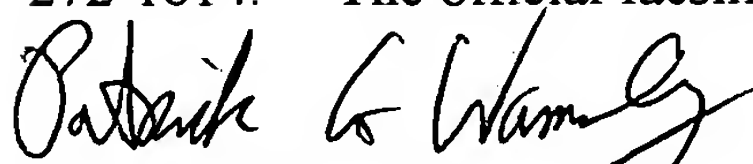
For claim 32, Jain's third transmission line is longer than one tenth of the signal wavelength.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent 6,573,803 to Ziegner et al discloses a microstrip to waveguide transition. U.S. Patent 6,396,363 to Alexanian provides a transition from a planar transmission line to a waveguide. U.S. Patent 6,040,739 to Wedeen describes a waveguide to microstrip backshort. U.S. Patent 5,812,032 to Stitzer presents a stripline transition. U.S. Patent 5,600,286 to Livingston et al describes a line-to-waveguide transition. U.S. Patent 4,870,375 to Krueger et al furnishes a microstrip to stripline transition. U.S. Patent 4,754,239 to Sedivec shows a waveguide to stripline transition assembly. U.S. Patents 4,651,115 to Wu, 4,260,964 to Saul, and 3,969,691 to Saul all show waveguide to microstrip transitions.

Art Unit: 2819

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick G. Wamsley whose telephone number is (571) 272-1814. The official facsimile number is (703) 872-9306.

A handwritten signature in black ink, appearing to read "Patrick G. Wamsley". The signature is fluid and cursive, with the first name "Patrick" being more prominent than the last name "Wamsley".

*Patrick G. Wamsley*

*December 27, 2004*